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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,300	07/24/2000	Neil G. Jacobson	X-651 US	7042

7590 09/10/2004
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EXAMINER

VO, LILIAN

ART UNIT PAPER NUMBER

2127

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/626,300

Applicant(s)

JACOBSON, NEIL G.

Examiner

Lilian Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 7 and 14 - 19 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1 - 4 and 14 - 19 is/are rejected.
7) ☒ Claim(s) 5 - 7 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 – 7 and 14 – 19 are pending. Claims 8 – 13 have been cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 - 4 and 14 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lo et al. (US Pat. Application Publication US 2002/0156914 A1, hereinafter Lo) in view of Sharrit et al. (US Pat. 5,999,990, hereinafter Sharrit).

4. Regarding **claim 1**, Lo teaches a method for allocating resources to a plurality of functions in a system (abstract) comprising:

monitoring activity levels of the functions (page 1, paragraphs 8 – 9, pages 4 - 5, paragraphs 0047, 0049, 0050 and 0057 - 0058);

detecting when the activity level of a first function is decreasing (page 4, paragraphs 0057 – 0058);

selecting a subset the resources that implement the first function (page 4, paragraphs 0057 – 0058: when the traffic level drops below a configurable threshold, the controller

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decreases the bandwidth allocated to the path (each path does different function) by a value smaller than the previous increment (reconfiguring just a subset, a portion of resource) and by dynamically allocating bandwidth for paths and redistributing resource to other paths (with different configuration bitstream) where they are needed);

selecting a configuration bitstream for implementing a second function (page 1, paragraphs 8 - 9, page 5, paragraphs 0058, 0060); and

reconfiguring the subset of the resources implementing the first function with the configuration bitstream of the second function (page 4, paragraphs 0057 – 0058).

Lo teaches of allocating bandwidth resources to a plurality of functions, but he did not teach about programmable logic devices (PLDs) resource. Nevertheless, Sharrit teaches a communicator with a plurality of reconfigurable PLDs resource that can dynamically altered to perform any of the processing functions (abstract, col. 2, lines 35 – 50).

It is obvious for one of ordinary skill in the art to combine the teachings of Sharrit and Lo to reallocate the available resource such as bandwidth and/or PLDs as necessary so that dynamically balances utilization of the resource can be achieved (Lo: abstract).

5. Regarding **claim 2**, Lo teaches the method of claim 1, further comprising periodically sampling the activity levels of the functions (page 4, paragraph 0049).

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16. Regarding **claim 3**, Lo teaches the method of claim 2, which further comprising determining whether the activity level of the first function is decreasing after the steps of sampling the activity levels of the functions a selected number of times (page 7, paragraph 85: bandwidth allocation adjustments made after several iterations of paths occupancy.)

6. Regarding **claim 4**, Lo teaches the method of claim 1 further comprising:
detecting when the activity level of the second and a third function are increasing (page 4, paragraphs 0057 – 0059, 0063 – 68, page 6, table 1);

allocating the subset of resources between the second and third functions in portion to a ratio of increasing activity levels between the second and third functions (page 5, paragraphs 0058, 0059, page 7, paragraph 0085);

selecting a configuration bitstream for implementing a third function, wherein the
~~configuration bitstreams for implementing the second and third functions proportionally allocate~~
the subset of resources in proportion to the ratio of increasing activity levels (page 1, paragraphs
~~8 - 9, page 5, paragraphs 0058 – 0060 and page 7, paragraph 0085); and~~

reconfiguring the subset of the resources with the configuration bitstream of the second and third function (page 4, paragraphs 0057 – 0058, page 7, paragraph 0085).

Lo teaches of allocating bandwidth resources to a plurality of functions, but he did not teach about programmable logic devices (PLDs) resource. Nevertheless, Sharr-it teaches a communicator with a plurality of reconfigurable PLDs resource that can dynamically altered to perform any of the processing functions (abstract, col. 2, lines 35 – 50).

It is obvious for one of ordinary skill in the art to combine the teachings of Sharrit and Lo to reallocate the available resource such as bandwidth and/or PLDs as necessary so that dynamically balances utilization of the resource can be achieved (Lo: abstract).

7. **Claims 14 - 19** are rejected on the same ground as stated in claims 1, 2 and 4 above.

Allowable Subject Matter

8. Claims 5 – 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 6/03/04 have been fully considered but they are not persuasive for the reasons set forth below.

10. In response to applicant's arguments against the references individually (page 8, 2nd paragraph), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

11. With respect to applicant's remark that the combination of references fails to show the limitations of selecting a subset of PLD resources that implement the first function and reconfiguring those resource to implement the second function (page 8, 3rd paragraph – page 9, 1st paragraph), the examiner disagrees. The office action cites Lo's paragraphs 57 – 58 to show the limitation of selecting a subset of resource that implement the first function by decreasing the bandwidth allocated to a path by a value smaller than the previous increment amount and dynamically allocating and redistributing resource to other paths where they are needed. Hence, each path does different task (function) and the configuration (bitstream) for each path is different when the resource is allocated/redistributed. The examiner then uses Sharrit to show the management of PLDs resource that is not in Lo. Thus, the combination of references clearly suggests the limitations of selecting and reconfiguring a subset of resources that implement one function to implement another function.

Furthermore, Sharrit shows that one or more RRUs (an RRUs includes a GPP and FPGA, col. 5, line 58 – col. 6, line 13) among the system RRUs can be selected for reconfiguring to perform the required processing task (another function) in col. 5, lines 3 – 5. In other words, some RRUs (subset of RRUs) will be selected to reconfiguring for performing other task (function) than the one task that they have been originally configured to perform. Thus, Sharrit also suggest the limitation a subset of the resource as recited in the claim.

12. In response to applicant's argument that there is no suggestion to combine the references (page 9, 2nd paragraph), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where

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there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation for the rejection is found in the reference (Lo's) and in the knowledge of generally available to one of an ordinary skill in the art, in which to reallocate the available resource such bandwidth and/or PLDs as necessary so that dynamically balances utilization of the resource can be achieved.

13. In response to applicant's argument that the alleged motivation is insufficient to support prima facie obviousness because the combination of Lo's and Sharrit's would not appear to achieve a reasonable level of success and would appear to render Lo's system unsatisfactory for its intended purpose (page 9, last paragraph – page 10, 2nd paragraph), the test for obviousness is ~~not whether the features of a secondary reference may be bodily incorporated into the structure~~ of the primary reference; nor is it that the claimed invention must be expressly suggested in any ~~one or all of the references.~~ Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 6,020,758 (Patel et al.) disclosed the PLDs capable of being dynamically partially reconfigured.

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

~~16. Any inquiry concerning this communication or earlier communications from the~~
examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The
~~examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.~~


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2127

lv
August 30, 2004


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